

AR 226-1399

cc: T. A. Foster

August 29, 1984

PERSONAL AND CONFIDENTIAL

TO: J. A. SCHMID

FROM: J. F. DOUGHTY

*J. F. Doughty*SUMMARY OF C-8 IN WATER SAMPLING PROGRAM

This letter summarizes the sampling procedure and the results of the program to obtain C-8 concentration data for drinking water down river from the plant. The original set of samples were taken on March 15, 1984. A second set of samples was taken at selected locations on June 4, 1984.

The samples were taken by going to gas stations or small grocery stores in communities down stream of the plant and asking to have a plastic jug filled with drinking water. The sample obtained was then transferred to 8 oz. glass bottles. Two bottles were obtained. One bottle was used for analysis and the second was used as a retainer for future use if needed. Samples were also obtained up river to check for a background or blank and to insure that the samples were not being contaminated in the sampling procedure.

The original plan was to have the samples analyzed here on plant by a modification of the procedure used to determine C-8 in air. To get sensitivity below the concentration calculated for dilution of C-8 emissions by the river flow, a sample size of 100 ml was freeze dried. The subsequent analysis produced high and inconsistent blanks and data. When the analytical problems could not be resolved on plant, the samples were sent to the Experimental Station for analysis by a modification of the C-8 in blood procedure. The details of the analytical procedure are given in the attached letter from S. R. Laas to J. F. Doughty.

The table below shows the locations of the samples taken on 3/15/84, the sample designation, and any comments.

| <u>SAMPLE</u>                      | <u>DESIGNATION</u> | <u>COMMENTS</u>               |
|------------------------------------|--------------------|-------------------------------|
| Parkersburg                        | P                  | Taken from my home.           |
| Washington Works                   | WW                 | Taken from drinking fountain. |
| Distribution Center of Parkersburg | D                  | Private well back from river. |

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AUGUST 29, 1984

| <u>SAMPLE</u>  | <u>DESIGNATION</u> | <u>COMMENTS</u>  |
|--|--------------------|--|
| Powell's Store<br>Washington, WV                       | WB                 | Thought to represent<br>Lubeck water.                        |
| Mason's Village Mkt<br>Little Hocking, Ohio            | L                  |  |
| Oiler Exon<br>Belleville, WV                           | B                  | Private well   |
| Reeds Country Store<br>Reedsville, Ohio                | RD                 |  |
| Randy's Amoco<br>Route 68<br>Ravenswood, WV            | RW                 |  |
| Gulf Station<br>Racine, Ohio                           | R                  | Known to be city<br>water.                                   |
| Gulf Station<br>Route 2<br>Point Pleasant, WV          | PP                 |  |
| Sohio Station<br>past bridge to WV<br>Gallipolis, Ohio | G                  | First community to<br>take water directly<br>from the river. |

The table below shows the locations of the samples taken on 6/4/84, the sample designation, and any comments.

| <u>SAMPLE</u>                               | <u>DESIGNATION</u> | <u>COMMENTS</u>                  |
|---|--------------------|----------------------------------|
| Du Pont                                     | WW                 | Taken from drinking<br>fountain. |
| Powell's General Store<br>Washington, WV    | WB                 |                                  |
| Lubeck Pennzoil<br>Lubeck, WV               | LB                 | In middle of Lubeck.             |
| Mason's Village Mkt<br>Little Hocking, Ohio | L                  |                                  |

The attached letter to J. A. Schmid from J. F. Doughty summarizes the data and the location of the samples in relation to the plant. Note that the original value for the Little Hocking sample should be changed to 0.6 instead of 0.8. This change is made by hand in the letter attached.

JFDoughty:0072t  
Attachments

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PERSONAL AND CONFIDENTIAL

CC: T. A. Foster

June 14, 1984

TO: J. A. Schmid

FROM: J. F. Doughty

*J. F. Doughty*

UPDATE on C-8 IN WATER SAMPLES

The attached table shows the C-8 in water data including the most recent data. I conclude the new data confirm the original data.

1. The Du Pont data shows that the test does not see C-8 up river and the sampling system does not contaminate the sample.
2. The second Washington sample had essentially the same C-8 content as the first.
3. The new Lubeck sample shows essentially the same concentration as the Washington sample. Thus the Washington sample is from the Lubeck Water System as I suspect or at least the Lubeck system has the same concentration.
4. The original Little Hocking sample was very close to the detection limit for the test. The concentration now appears to be below the detection limit.

I do not plan to do additional sampling unless further information is needed. The concentrations are very low and in my judgement are not cause for concern.

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C-8 IN WATER (3/15/84) and (6/4/84)

| LOCATION                                 | DISTANCE<br>(MILES) | SIDE | ppb C-8***   |
|--|---------------------|------|--|
| PARKERSBURG                              | 7.5 up stream       | WV   | ND   |
| DU PONT<br>(3/15/84)<br>(6/4/84)         | 0.5 up stream       | WV   | ND<br>ND   |
| DISTRIBUTION<br>CENTER OF<br>PARKERSBURG | 0.25 down stream*   | WV   | ND   |
| WASHINGTON<br>(3/15/84)<br>(6/4/84)      | 0.25 down stream    | WV   | 1.27 <sup>1.27</sup><br>1.07 <sup>1.1</sup>                    |
| LUDECK<br>(6/4/84)                       | 0.25 down stream    | WV   | 1.5  |
| LITTLE HOCKING<br>(3/15/84)<br>(6/4/84)  | 3 down stream       | OHIO | 0.6 <sup>2.25</sup><br><del>0.2</del> <sup>8/24/84</sup><br>ND |
| BELLEVILLE                               | 12 down stream      | WV   | ND   |
| REEDSVILLE                               | 14 down stream      | OHIO | ND   |
| RAVENSWOOD                               | 29 down stream      | WV   | ND   |
| RACINE                                   | 50 down stream      | OHIO | ND   |
| POINT PLEASANT                           | 74 down stream      | WV   | ND   |
| ** GALLIPOLIS                            | 79 down stream      | OHIO | ND   |

\*well is back from the river

\*\*first community to take water directly from the river

\*\*\*values obtained from Experimental Station multiplied by 1.5 to  
convert to C-8 vs F content originally reported

ND = below the detection limit of 0.6 as C-8 (0.4 as F)

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Polymer Products Department  
Research and Development Division  
Experimental Station

cc: S. C. Croft - 256  
M. A. Kaiser - 256  
T. K. Wu - 323  
PRAL File - 256  
I.C. - 323

ANALYTICAL REPORT

June 25, 1984

TO: J. F. DOUGHTY - PPD, WASHINGTON WORKS

FROM: S. R. LAAS *SR Laas*

PERFLUOROOCTANOATE (C8) IN WATER

(Job No. 840-0670; PRAL Nos. 84-3201-6; 3464-68; 3979-82, Notebook No. E27552)

Fifteen samples of water have been analyzed for perfluorooctanoate (C8) by electron capture gas chromatography. Method ES-567 was used with the following modifications: sample size was 10g; lyophilization was ~18-20 hours; concentration of perfluorodecanoate internal standard was decreased 10 fold. Spiked standards at concentrations of 0.1, 0.2, 0.3, 0.4 ppb were examined. A reproducible detectable peak was observed for 0.4 ppb and we have used this as our detection limit. No C8 peak was detected in the spiked standards < .4 ppb. For the quantitation we had linear calibration curves over the range of 0.4 to 1 ppb. The samples were freeze dried, derivitized, and analyzed in duplicate. The results are expressed as ppb fluoride where  $\text{ppb F} = 0.688 \times \text{ppb perfluorooctanoate}$ .

The results are given in the attached table. If you have any questions, don't hesitate to call.

msg  
Attachment

Keywords:  
GC  
Perfluorooctanoate  
Water

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TABLE I

Perfluorooctanoate in Water

| <u>Pral No.</u> | <u>Designation</u> | <u>ng F/g Water (ppb)</u> <sup>(a)</sup> |
|-----------------|--------------------|--|
| 84-3401         | P                  | n.d.                                     |
| 84-3402         | D                  | n.d.                                     |
| 84-3403         | L                  | 0.4                                      |
| 84-3404         | G                  | n.d.                                     |
| 84-3405         | RD                 | n.d.                                     |
| 84-3406         | WB                 | 0.8                                      |
| 84-3464         | B                  | n.d.                                     |
| 84-3465         | WW                 | n.d.                                     |
| 84-3466         | R                  | n.d.                                     |
| 84-3467         | RW                 | n.d.                                     |
| 84-3468         | PP                 | n.d.                                     |
| 84-3979         | WB                 | 0.7                                      |
| 84-3980         | L                  | n.d.                                     |
| 84-3981         | WW                 | n.d.                                     |
| 84-3982         | LB                 | 1.                                       |

(a) n.d. = none detected; detection limit = 0.4 ppb.

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